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ABSTRACT

A new course, Independent Study Research and Writing via Telecommunications, is being developed by the Division of Independent Study (DIS) of the North Dakota Department of Public Instruction to teach telepublishing skills utilizing the NeXT telecommunicating (interpersonal computing) techniques, i.e., NeXT Mail. This multimedia electronic-mail application is capable of sending and receiving text, data files, sound, video, animations, images, facsimile, and graphics. The goals of this pilot project include: (1) providing students and teachers in participating schools with online support and assistance in developing educational resources; (2) using multimedia interpersonal computing to extend library services between school districts; (3) corresponding about classroom use of mathematics; (4) enhancing advanced writing and composition projects; (5) using the medium as a pilot project with the Talented and Gifted (TAG) resource center for distance education; and (6) developing an online career guidance service which utilizes state and national networks. This report discusses the technologies involved, the goals of the project and accomplishments to date, the various projects supporting and cooperating with TAG, and SENDIT, a computer-mediated communication network for North Dakota K-12 educators. Descriptions of cooperative activities between higher education and K-12 schools, projected uses of online systems through SENDIT, and the status of the project in its second year of development conclude the report. (Contains 13 references.) (ALF)

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Desktop Video: Multi-Media on the NeXT Computer

Wednesday, April 1, 1992
9:15 - 10:00 a. m.

International Rural and Small Schools Conference
Ramada and Holiday Inn, Grand Forks, North Dakota
March 30, 31, and April 1, 1992

Presenters

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and

Jolene Richardson, Coordinator
Talented and Gifted Resource Center
Division of Independent Study

in conjunction with

Video Prepared by the Division of Independent Study
Department of Public Instruction

shown by

Robert Stone, Director, Fargo, North Dakota

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Features about a new course involving telecomputing and telepublishing called Independent Study Research and Writing via Telecommunications

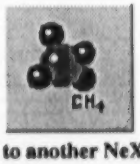
The Division of Independent Study has been approved by the North Dakota Department of Public Instruction to offer a new course which utilizes **NeXT** telecommunicating techniques. Telecommunicating combines distance electronic technologies with the skills of communication. It involves writing, speaking, displaying, searching, retrieving, or exchanging data via computer telecommunications. The latter is telecomputing that combines the technologies involved with television, computers, and telephone. They work through computer software processes which transmit text, data, images, sounds, facsimile, and video for displaying on monitors or reproducing images on paper. It also involves the use of modems, cameras, and laser printers.

In essence, telecommunicating is a form of distributing data processing. It places the power for searching, retrieving, managing, storing, and developing information on desktop computers. That information can then be selectively shared among participants and used for developing telepublishing products such as articles, term papers, newsletters or even teaching or conducting staff development over long distances. It is long-distance desktop publishing. The national newspaper, ***USA Today***, is an example of telepublishing.

Telecommunicating, telecomputing, and telepublishing are innovations resulting from utilizing multimedia or interpersonal computing techniques made possible by networking computers with modems to outside connections. These connection may involve telephone lines, microwave, satellites, cable, or various wiring systems within a closed loop system (local area networks). These technological innovations have made the **NeXT** Dimension the equivalent of a media research laboratory for telepublishing. The Division of Independent Study is developing this course of study for teaching these telepublishing skills. The following illustrations are examples of the fundamentals of telepublishing.

Captured from live video off the monitor and printed with a word processor.

This picture was captured while a video camera was displaying it on a **NeXT** Monitor during a workshop held in Fargo at the Division of Independent Study. The group was being displayed live and in full color on the **NeXT** monitor. However, once the computer mouse was double clicked on a camera icon, this print appeared alongside the active video display. It was then dragged and pasted onto a word processing document and printed on regular paper by a monochrome laser printer. Thus, televideo was instantly used to cut and paste for telepublishing purposes. The picture above, video vignette, or molecule (3-D) demo can be saved in files which are reduced to icons that look like the following:



These icons can be grabbed by a cursor and dragged onto a NeXT mail file and transferred to another NeXT computer at another school over telephone lines. The principle is the same as transferring application files.

Some acronyms have been developed by educators to help people keep in mind the processes necessary to do telepublishing activities while utilizing the telecomputing capabilities of the telecommunicating process. The acronym known as FAMPS summarizes the processes of telecommunicating:

F **for** searching and retrieving information.
A for **analyzing** data to distinguish hype from fact.
M for **managing** information and knowing what to save or not save.
P for **presenting** information in graphical, pictorial or written format.
S for **sharing** information via fax, e-mail, video-based, or print-based.

The skills or competency involved in telecommunicating include the ability to access, retrieve, and collate historical or current information by using state or national computer networks. Literacy and writing skills are also crucial in manipulating the techniques and technologies of the telecommunication media. The concepts and processes of journalism are involved, as well as the creation and utilization of computer graphics and fundamentals of desktop publishing.

Telecommunicating provides a way to establish a dialogue with others through an electronic medium such as **NeXT** Mail. This is a multimedia electronic-mail application capable of sending and receiving text, data files, sound, video, animations, images, facsimile, and graphics. It is also known as interpersonal computing. It provides a way to test new ideas in a flexible arrangement because it can transcend time barriers and exchange data with others asynchronously. In other words, when one person is in the process of telecommunicating, the other members of the network need not be on-line at the same time.

There are a variety of controls for the people involved in the network. The interpersonal computing power and access is controlled personally by each individual with a password, log in name, and computer address. As of this moment in time, only the interpersonal computing features of the **NeXT** computers provide the technology to transmit combinations of text, data files, sound, video, animations, images, facsimile, and graphics. However, other personal computers can transmit data files, image files, facsimile, and text only e-mail. By utilizing these telecommunicating techniques individuals can produce telepublishing information products via the telecomputing processes.

This pilot project was developed after a needs assessment was conducted by Dr. Stammen for Region 1 during November and December of 1990. This initiative also helped acquire a grant from ETC $15,250 for the TAG Resource Center to acquire **NeXT** equipment and a color scanner in order to support the pilot in the northwest and the Division can develop distance education courses with this new multimedia technology. Jolene Richardson, TAG Resource Center coordinator, will provide the teachers and students in these schools with online support and assistance in developing educational resources. In addition to utilizing these TAG resources, the project's goals center around using multimedia interpersonal computing for extending library services between school districts, corresponding about classroom use of mathematica, and enhancing advanced writing and composition projects.

Projects supporting and cooperating with TAG

A grant amounting to $99,912 was awarded by North Dakota's Educational Telecommunication Council (ETC) to the Northwest Telecommuniation Consortium's Northwest Dakota **NeXT** Project. It was used for training and development during the first phase which took place during the 1991-1992 school. year. Bruce Curtis, **NeXT** Campus consultant at the Computer Center, provides technical support for the project. Greg Smedsrud, **NeXT**'s district sales manager, helped during the first of three workshops involving 18 teachers. A corporate partner, Northwest Communication Cooperative of Ray, North Dakota, provided the facilities to host the sessions along with various in-kind services during the sessions.

The school districts involved in this project are Watford City, Tioga, Stanley, Eight Mile at Trenton, Divide County at Crosby, and Nesson at Ray. These schools acquired a cube and megapixel color display workstation which included a **NeXT** Dimension board, laser printer, 9600-baud modem, and optical

disk capability. Each school district provided $4,200 to match 25 percent of the grant to help support staff development, telephone lines, and sundry expenses involved in release time for teachers.

The second phase of the project involves using the medium as a pilot project with the TAG resource center involving the telepublishing course. The ultimate goal is to provide interactive video for conducting classes between the schools. However, the phase provided time for the schools to fully utilize interpersonal computing and adequately plan and adapt software and technology. Fiber optics and direct 9600-baud microwave services will be available in these communities next year. In the meantime, participants are practicing interpersonal computing techniques which include fax and transmitting messages over the telephone lines that contain color, sound, pictures, graphics, and text.

A continuation grant amount to $65,000 was provided by ETC in March, 1992 for these six school districts. These funds will be used to expand educational services by increasing memory to fully utilize the video capabilities; enhance the objectives to assure success and provide a stable system which can support endeavors like interactive television, a regional library network, and statewide information transfer systems.

The current teacher-based curriculum development process required continuation funds to assure establishment of services to teach students and facilitate information between and among teachers. The following objectives are the same for both the first phase and second phase; therefore, a comment is provided to give some indication of the progress underway to accomplish the project goal:

1. To facilitate the use of electronic text and multimedia transmission from school to school or from one school to all schools. **Progress**: This first stage is accomplished for text and multimedia, including closed circuit televideo. Two small in-kind grants have been acquired to demonstrate interactive television between two schools with experimental compressed video (T1) transmission.

2. To use the medium for distance education. **Progress**: Teachers and students in five schools are developing and field testing a telecommunicating and telecomputing course with the TAG/DPI project. Teachers and students in three schools are cooperatively using mathematica to enhance their coursework assignment and projects. These developments will expand during Phase 2.

3. To develop a cooperative system among schools which will provide access to standardized library information and provide access to each other's inventory. **Progress**: This Consortium has offered its newly gained expertise to support a union library that can be accessed and utilized (text only) by all other schools within the region.

4. To develop a system whereby talented and gifted students in one school can be part of a distance education team within the consortium and among other such entities. **Progress**: The Talented and Gifted Center is cooperating with the Consortium in developments involving mathematica, telecommunicating, and telepublishing courses.

5. To develop an on-line career guidance service which utilizes state and national networks. **Progress**: This objective has not begun, pending refinements of the current phase.

DIS, TAG, and SENDIT have a partnership

The Division of Independent Study is actively involved with SENDIT by being on their management team and producing its monthly newsletter. In addition, TAG has developed an online, text only pilot course in astronomy with SENDIT.

SENDIT is a computer-mediated communication network for North Dakota educators in the K-12 environment. It is funded by the Educational Telecommunications Council who provided $600,000 over a three year period. It has been developed by the NDSU School of Education and Computer Center for school districts across North Dakota. The system provides ways for both students and teachers to learn through the use of the computer and modem. They can exchange, share, search, and retrieve information. Currently, a toll-free number for schools allows users outside of the Fargo area to log on to the SENDIT

host **NeXT** computer. The members use the bulletin board containing Forums, send electronic mail across the state, access state and regional libraries, and get new curriculum ideas from other teachers across the state.

There are over 70 Forums which focus on specific topics of interest to members. They include topics for both teachers and students. They have names like Juniors, Seniors, English, Mathematics, Educational Technology,TAG-L listserve from the TAG Resource Center, etc. One of the most popular Forums last year was the one containing new legislative bills. Several teachers implemented this Forum into their government and history classes. Forums can be established for members only so they can exchange ideas privately. Many utilize the Forums made possible through a service at Ohio State University called HALS@discovery. It gathers information which is then transferred and deposited into two other SENDIT Forums that deal with the topics about educational technology and educational telecommunication. An organization called FidoNet supplies information for the Kids Network Forums. This is all made possible through the use of the North Dakota Higher Education Computer Network's connection with Internet.

The cooperation between higher education and K-12 schools came about as part of a requirement which needed to be satisfied in a National Science Foundation (NSF) grant application for statewide Internet protocol for all colleges and universities in the state system. That NSF grant was subsequently funded. This will provide better access to Internet throughout North Dakota. Internet is an international computer network that will allow North Dakota educators to gain access to national and international on-line resources. State and national administrative sources are urging and/or mandating this type of cooperation between universities and school districts.

Several other changes are underway for on-line programs such as NASA Space Link, FrED Mail, Cleveland Freenet, and AT&T Learning network. Cleveland Freenet's bulletin board system is now installed in the **NeXT** host computer located at the state's computer center at NDSU. It is being tested on SENDIT before a decision is made to make it available to the on-line members. This will make it easier to transfer files from teacher to teacher and allow an easy access to Internet. It will also provide more statistical information about who is doing what, when, and how many times. This accounting data is important because as SENDIT matures and provides access to more services, the providers will want accountability. Access to college libraries like Minnesota's Public Access Library (PALS) and Online Dakota Information Network (ODIN) is a popular service. This includes access to ERIC searches. When clearance is established to utilize Internet, a teacher will also be able to subscribe for access to Colorado Alliance Regional Library (CARL) libraries located throughout the nation. A demonstration was provided during a workshop in Ray, North Dakota showing how this is possible by utilizing Internet. Internet will soon be more accessible to all our colleges and universities, as well as being available on SENDIT.

This is the second year of development. The membership is growing each week as school building trainers spread the news in their area. SENDIT is still a pilot project. Any teacher who is knowledgeable about accessing bulletin boards can get the number and log on to become a registered member. However, there is a training pattern in place to assure that every teacher in the state is afforded the opportunity to be trained by the time the school year ends in the spring of 1993.

The system is attended daily by Dan Pullen, a technology communication manager, and Gleason Sackman who also manages one of the first school bulletin board systems which is located at Bottineau. Sandy Sprafska provides assistance from the Computer Center. The teacher training team consists of Pullen, Gleason, Sprafska, and Stammen. All these personnel work parttime for the project.

Robert Stone and staff provide support service for curriculum and produce a monthly newsletter. Jolene Richardson, coordinator for the Talented and Gifted Center of the Division of Independent Study, provides curriculum support for all endeavors. The SENDIT project is co-directed by Don Peterson manager of the Computer Center and Dr. Bill Woods coordinator of educational administration program at NDSU. Anyone wishing information should call 237-7085.

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Grant 1 - $600,00 - Implementation of Statewide Computer-mediated Communication Network (SENDIT) A K-12 University Cooperative Endeavor

Grant 2 - $99,998 - Implementation Interpersonal Computer Telecommunications and Desktop ITV Phase 1 Northwest Dakota NeXT Project

Grant 3 - $15,500 - Interpersonal Computer Desktop ITV Station at Division of Independent Study Telepublishing and Development Support

Grant 4 - $65,000 - Continuation Interpersonal Computer Telecommunications and Desktop ITV Phase 2 Northwest Dakota NeXT Project

Information about the presenters

Ron Stammen is chairman of the Advisory Committee for the ND Educational Telecommunication Council. Retiring from public school service after being superintendent of schools at Divide County School District for 20 years, he is now an assistant professor of educational administration at North Dakota State University/Tri-College University in Fargo, ND. He has taught eight courses across North Dakota over the university system's Interactive Video Network. As a 1988-1990 Robert E. Taylor Fellow at The Ohio State University he was involved in pioneering distance education projects with computer conferencing.

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NORTHWEST TELECOMMUNICATION CONSORTIUM
Dr. Ron Stammen, Coordinator, Region 1
Supt David Rust, Tioga School District, Chairman
Supt. Donald Nielsen, Divide County School District, Secretary-Treasurer

Jolene Richardson is coordinator of the DPI Division of Independent Study's Talented and Gifted Resource Center. She is a member of the North Dakota Steering Committee for Gifted Education as well as president-elect for the Gifted Education Network. Using telecommunications to strengthen and develop students' potential by increasing the availability of resources to all students in North Dakota has become one of her top priorities.

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